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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/067,208 | 04/28/1998 | WILLIAM G. HOWARD | P-7860 | 9814 |

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| EXAMINER | |
|---|---|
| CREPEAU, JONATHAN | |
| **ART UNIT** | **PAPER NUMBER** |
| 1746 | 34 |

DATE MAILED: 06/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 09/067,208 | Applicant(s) HOWARD, WILLIAM G. | |
|---|---|---|---|
| | Examiner Jonathan S. Crepeau | Art Unit 1746 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *11 April 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,3-8,10,12-17 and 95-97* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-8,10,12-17 and 95-97* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

## DETAILED ACTION

### *Response to Amendment*

1. This Office action addresses claims 1, 3-8, 10, 12-17, and 95-97. The claims remain rejected under 35 USC §103 for the reasons of record. Accordingly, this action is made final.

### *Claim Rejections - 35 USC § 103*

2. Claims 1, 3-8, 10, 12-17, and 95-97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al (U.S. Pat. 5,549,717) in view of Howard et al (U.S. Patent 5,439,760).

Regarding claims 1 and 10, in Figure 4 and in column 3, line 36-column 4, line 55, Takeuchi et al. teach an electrode assembly having two substantially straight sides and comprising spirally-wound anode and cathode assemblies. Regarding claims 1, 3, 10, and 12, the anode assembly comprises a nickel current collector (68) and lithium strips (64, 66). Regarding claims 1 and 10, a tab (72) extends from the edge of current collector 68. Current collector 68 has a smaller length and width than the length and width of lithium strip 66 (see col. 4, line 39). Regarding claims 1, 4, 6, 10, 13, and 15, the cathode assembly comprises silver vanadium oxide active material (47) which is embedded into a titanium current collector (54). Regarding claims 1 and 10, the current collector 54 comprises tabs (48, 50) extending from the edges. Regarding claims 5-8 and 14-17, Takeuchi et al. incorporate by reference the disclosure of Keister et al (U.S. Pat. 4,830,940), which discloses that the cathode can comprise a mixture of

silver vanadium oxide, PTFE binder, and graphite powder conductivity enhancer (col. 8, lines 37-42 of Keister et al). Regarding claims 1 and 10, in column 4, line 26, Takeuchi et al. disclose that the separator surrounding the cathode assembly is sealed on all three open sides so that only the tabs project. In column 5, line 25, Takeuchi et al. disclose that alternatively, a separator may be folded around the anode assembly in a manner similar to the cathode assembly. Regarding claims 1, 10, and 97, in Figures 7, 8, and 10 and in column 5, line 63 et seq., the reference discloses that the portion of the anode (80) around the periphery of the electrode assembly (i.e., the "end segment") requires only one lithium strip.

Takeuchi et al. do not expressly teach that the anode current collector forms the outermost layer of the electrode assembly (claims 10 and 97), or that the cathode current collector is shorter than the lithium strip by an amount that enables the end segment of the anode assembly to be wound into the outermost layer (claim 10). Takeuchi et al. also do not expressly teach that the separators cover both the cathode and anode assemblies simultaneously, as recited in claims 1 and 10.

Howard et al. teach pocket-type separators covering spirally wound anode and cathode assemblies in column 3, lines 37-46. Additionally, Howard et al. teach in Figure 10 and in column 6, lines 53-65 that the length of the alkali metal strip (15) is longer than the length of the cathode current collector by an amount that enables the end segment of the anode assembly to be wound into the outermost layer.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the patent

of Howard et al. to use separators simultaneously on the anode and cathode assemblies of Takeuchi et al. Although Takeuchi et al. in effect disclose that a separator is placed on either the anode *or* the cathode assembly, the artisan would understand that covering both electrode assemblies (as shown by Howard et al.) would be an advantageous modification of the battery of Takeuchi et al. because dendrite protection would be increased and delamination of both active material layers would be decreased. As stated in Howard et al. at column 3, line 40, "[t]he separator pouch then prevents the transport of stray material in the cell which could cause a short circuit and the double thickness of the separator between anode and cathode elements better resists damage during the winding process." The separators of Howard et al. are made by a folding and sealing method (col. 5, lines 33-68 of Howard et al.), as recited in claims 95 and 96.

Furthermore, the disclosure of Takeuchi et al. provides sufficient guidance for the artisan to ascertain that the anode current collector forms the outer layer (winding) of the electrode assembly. As stated above, the reference discloses that the portion of the anode around the periphery of the electrode assembly requires only one lithium strip. From this disclosure, the artisan would be able to ascertain that the one lithium strip would be present on the inside portion of the anode current collector, in order to make contact with a corresponding cathode active material layer. Accordingly, it would be well within the skill of the art to ascertain that the anode current collector would form the outer layer of the electrode assembly. Additionally, it is noted that the Howard et al. reference is also concerned with the having the anode current collector in the outermost layer of the cell. Therefore, the way that Howard et al. achieve this configuration (by making the cathode current collector shorter than the lithium strip, as recited in

claim 10) is deemed to be an obvious way of achieving this same configuration in the battery of Takeuchi et al.

***Response to Arguments***

3. Applicant's arguments filed April 11, 2003 have been fully considered but they are not persuasive. Applicant maintains the position that the '760 patent (Howard et al.) supports the claimed limitation that the anode current collector is shorter in length than the alkali metal strip. Applicant maintains reliance on Figure 1 of the '760 patent and further cites column 5, lines 44-49 of the '760 patent to support this position. As asserted previously by the Examiner on the record, it is not clear that the inventors of the '760 patent had possession of or specifically envisioned the feature that the collector 5 is shorter than the alkali metal layer 15. Figure 1 of the '760 patent is merely a pictorial representation of the invention and is not believed to adequately support the claimed limitation under 35 USC §112, first paragraph, absent a relevant disclosure in the specification of the patent. Column 5, lines 44-49, which is cited by Applicant as supporting the claimed limitation, discloses that the side of the separator 25 is pressed into the surface of the alkali metal 10, 15 such that the alkali metal deforms into intimate contact with the separator and bonds to the separator. Applicant states that "in order for the separator 25 to bond with the alkali metal layer 15 at the obscured end referenced by the Examiner and enclose the anode assembly, the alkali metal layer 15 needs to extend out beyond the anode current collector 5 at the obscured end. As a result, anode current collector 5 must be shorter in length than alkali metal layer 15 at both ends." However, it is submitted that the disclosure of Howard et al. does

not compel a conclusion that the alkali metal 15 must be longer than the current collector. It is believed that this disclosure is not germane to the length of the current collector and metal strips, and the artisan would not be able to glean any information regarding these lengths from this disclosure. For example, the other alkali metal strip (10) is expressly disclosed as being *shorter* than the current collector 5 (col. 5, line 4). This strip 10 appears to be properly bonded to the separator 25 along the entire length of the strip, even though it is shorter than the collector 5. Therefore, the mere fact that the reference discusses bonding of the separator to the alkali strips is not believed to be relevant to the length of either strip. Hence, Applicant's position that col. 5, lines 44-49 supports the claimed limitation is not seen as persuasive, and the rejection is maintained.

***Conclusion***

4. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (703) 305-0051. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached at (703) 308-4333. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900. Additionally, documents may be faxed to (703) 305-5408 or (703) 305-5433.

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JSC

June 16, 2003

RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700